

Refereed papers

Attitudes and practices of recording diabetic patient information within an Australian general practice setting: an exploratory study

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ABSTRACT

Background An accurate diabetes register enables a general practice to effectively monitor and manage the services for their patients with diabetes. This pilot project builds on the National Primary Care Collaboratives Program (a quality improvement programme for general practice) as the first change principle for managing chronic diseases.

Objectives The main aim of the project was to improve the systems management of electronic registers of people with diabetes in the general practice setting. The pilot project assessed the uptake, awareness and confidence levels amongst practice staff in improving the diabetes register.

Method This was completed by conducting a survey of general practitioners and practice nurses

within one general practice in Perth, Western Australia. In addition, focus groups pre and post intervention were facilitated to obtain practice staff's views upon the issues around maintaining an efficient and updated patient register within a busy practice setting.

Results By the end of the project the general practice had an established diabetes register with defined and agreed practice systems.

Keywords: computers in general practice, data quality, diabetes

Introduction

Diabetes is an increasingly common, chronic condition that has a high risk of serious morbidity and premature mortality.¹ In Australia the prevalence of Type 2 diabetes has doubled over the past 20 years with more than 7% of adults now having the disease.² General practitioners (GPs) play an integral role in managing patients with diabetes.^{3,4} In Australia the BEACH Report for 2006–7 noted that diabetes represented 1% of all presenting problems in general practice.⁵

There is compelling evidence that indicates adopting a structured and systematic approach toward diabetes care within a general practice setting markedly improves the quality of care and health outcomes for patients with the disease.^{3,6} Electronic diabetes registers which incorporate a regular review and recall system facilitate the promotion of this approach and assist with the effective monitoring, management and treatment of diabetic patients.^{3,7} Results of a survey commissioned by the General Practice Computer Group, conducted by the University of Queensland in 2001, showed that 89% of Australian general practices use computers, although the computers were more likely to be used for administrative purposes than clinical applications.⁸ Government incentives (Practice Incentive Payments) encourage electronic data collection,⁹ whilst indicating that it is beneficial for electronic data systems to be employed for other uses besides administration.

To gain maximum benefit from data coding systems, coding systems need to be uncomplicated and user friendly, so practitioners are comfortable with using them. This requires training of general practitioners and practice staff so that data is entered and retrieved correctly.⁹ A project developing a standard data set in the United Kingdom emphasised the need for clinical data sets to be consistent with adequate classification codes including standard definitions in order to reduce coding problems such as inconsistency of entries.^{10,11} The use of coding systems for clinical registers also allows for the provision of up-to-date information of patients and systematic recall for testing and treatment procedures.¹² Furthermore, a study of United Kingdom hospital data showed evidence of the efficacy of intervening to clean data and implement an appropriate coding system to electronic patient records. This included a 12-month retrospective review of a published database, with results yielding incomplete data, mainly due to failure to transfer patient data into an electronic format.¹³

An intervention in data coding of registers, involving training of GPs and practice nurses who were part of the North Staffordshire (UK) GP Research Network has shown positive results. In the study, all practices

involved in the network were visited, the intervention process was explained and a formal agreement reached. Across all seven practices involved in the study, the level of coding increased from 60% at baseline to 93% at the fourth assessment for GPs, and from 45% at baseline for nurses to 77% at the fourth assessment.¹⁴

This is a pilot study which sought to determine the effect of an intervention relating to coding systems for the diabetes register within one general practice over the period of six months. The objectives were as follows:

- Improve the systems management of electronic registers of people with diabetes in the general practice setting using an action evaluation framework of the current systems.
- Facilitate an accurate diabetes register through data cleansing incorporating validation of the current register from pathology records, and justification of additions to and removal of patients from the register.

Methodology

Sample

An invitation was extended by Perth and Hills Division of General Practice to GPs and practice staff for a West Australian general practice to be involved in an informatics pilot project, as a precursor to involvement with the Australian National Primary Care Collaborative Program. The intervention used a data cleaning process (Box 1) to improve the quality of data contained within the patient diabetes register. Data cleaning is a process used to improve data quality. It removes errors, reduces the chance of inaccuracies, and repairs problems that may occur within databases.¹⁵ The data cleaning intervention was performed by a computer systems analyst and programmer from the Perth and Hills Division of General Practice. GPs and practice nurses were surveyed before the register cleansing took place, mid-point during the intervention and post intervention. The data cleansing procedure and protected learning time allowed staff and GPs to learn this new procedure.

Methods

Questionnaires were developed for pre and post intervention tests regarding accuracy and proficiency amongst practice nurses and GPs regarding the use and maintenance of databases. Practice team members consisted of the GPs, practice nurses, reception

Box 1 Data cleaning process

STAGE 1 The patient register was manually checked for the following errors:

- Duplications in patient ID number. (Most commonly occurring with spelling errors to surnames of patients when record was manually entered by reception staff.)
- Patients who were deceased. (These were removed from the register.)
- Patients who had not attended the practice in one year or longer. (These were also removed.)

STAGE 2 All errors were manually corrected and duplicates removed.

STAGE 3 Codes were inserted and a drop-down coding system put in place. Medical conditions were not only recorded in free text in the Past Medical History, but were also coded in the Clinical Coding section of the patient's record. Text which had been manually entered was clarified using simplified codes for Type 1 and Type 2 diabetes.

staff and a practice manager. All were asked to complete the questionnaire about current methods of entering and maintaining a diabetes register within that particular practice. Questionnaire items included respondent knowledge of diabetes definitions and guidelines, methods of entering patient information into the register and who was responsible for the aspects of the register such as new records, recording patient information and data registry maintenance.

This study had ethics approval from the University of Western Australia Human Ethics Committee.

Results

The initial audit of the diabetes register in the practice identified 415 patients coded as diabetic. The intervention of data cleaning was completed over an 11-hour period with a post intervention increase of patients on the register to 583 patients. A decision by the practice staff to inactivate patients who had not attended the practice in the last year dropped the total number of active patients on the database from 43 000 to 15 000 and modified the number of patients on the diabetes register to 484. The final audit six months post intervention identified 515 patients on the diabetes register.

A component of the intervention was obtaining consensus from the GPs on how to code diabetes on the electronic patient records. At study baseline there

were seven different codes used by the GPs to identify patients with diabetes. The agreed simplified coding was Type 1 Diabetes and Type 2 Diabetes.

After comparing the pre and post results, greater willingness to engage in data management was evident particularly with practice nurses. Their compliance had increased in adding a new patient record onto the register from 7% to 64%, and in removing patient records from 14% to 64%.

Additionally, GPs and practice nurses were more likely to use codes from the menu following the intervention (31% increase in use of codes) and less likely to use free text to enter patient diagnostic information (20% decrease in use of free text). Furthermore, practice nurses and GPs were more willing to extract data from the diabetes register following the intervention (8.3% pre intervention versus 40% post intervention) and reported greater success (75%) in doing so. The main reasons for extracting the data were for research and recall purposes (such as reviewing the current status of diabetes patients) and for monitoring patient data for quality improvement.

Thus, the overall ability of GPs and staff to enter, cleanse and extract data had significantly improved following the intervention (Box 2). Furthermore, the time taken to engage in data entry and data cleansing had reduced at the end of the intervention. Pre intervention, 22 of GPs and practice nurses spent more than two hours a week on data entry, however, post intervention 40% indicated spending less than one hour a week on it. In terms of the time it took participants to clean data all GPs and practice nurses reported that pre intervention it took them over two hours per week to clean the data whereas following the intervention this decreased to less than one hour per week.

Discussion

Following a validation study of computer held chronic disease registers in general practice the importance of identifying all diabetic patients to assist with promoting a structured care approach was demonstrated.¹⁰ Burnett *et al* (1992) also emphasised the importance of structuring care for diabetes patients when they compiled a district-wide register in the UK of all diabetic patients in the catchment area of a single district hospital.³

GPs that use diabetes registers have been found to be more likely to provide patient care that aligns with evidence-based guidelines and to review their patients more frequently than GPs not using registers.¹⁶ Furthermore, other studies have shown that GPs who used registers ordered tests based on evidence-based guidelines (e.g. HbA1c and microalbuminuria) more frequently than GPs who didn't use registers.¹⁷

Box 2 Main themes arising from the project

The main issues:

- Inconsistencies in methods of entering patient information in the register. Variations in coding practice. Time factor involved in engaging in data management.
- Lack of clarity with regard to the roles assigning for tasks associated with the register (e.g. new records, maintaining the register, recording past medical problems).
- Lack of confidence of practice nurses in extracting data.
- Potential of practice nurses to contribute to data management.

Key themes:

- Consensus gained amongst GPs and practice staff in regard to simplified coding practice for diabetic patients. Increase in use of the drop down menu for coding (31% increase in use of codes) and decrease in use of free text.
- Time improved post intervention in data management tasks such as data entry and cleansing.
- Training and simplified system for data management meant that practice nurses were more willing to engage at all levels in tasks associated with the patient register.

Practice nurses showed greater willingness post intervention in engaging in data management (adding and removing patient records increased from 7% to 64%).

The significant role played by the practice nurses in this study in maintaining the disease register was an interesting finding and indicates the need for multi-disciplinary training and support to improve the quality and use of registers. It was also noteworthy that a 'whole-of-practice' approach was vital as the receptionists, individual GPs, practice nurses and the practice manager were all involved to some extent in developing/maintaining and updating the register/recall system within the general practice. Data entry and an agreed consensus in coding were achieved in facilitated practice meetings. The study demonstrated there is a need for an investment of time and resources to achieve the desired result with 11 hours required within the practice to cleanse the database, and further time needed for facilitated practice meetings and education to develop practice specific systems.

Implications for general practice

Given the demonstrated benefits of accurate and workable diabetes registers in general practice, this study sought to evaluate the mechanisms needed to achieve and maintain an accurate electronic diabetes register.

- The ability to utilise the system more efficiently as a result of the intervention was a long-term goal and would be greatly assisted by raising awareness amongst staff in the first instance.
- Using a whole-of-practice approach, providing capacity within the practice for the initial database cleansing, gaining consensus and educating staff as to the benefits of a register are the components of a successful intervention.

Data cleaning and disease register maintenance should be considered alongside other interventions to improve data quality.¹⁸

Conclusions

This study adds to our knowledge of barriers to data quality in Australian general practices. Whilst further research is needed to confirm whether these findings can be generalised, this study suggests a relatively small intervention has a large effect on coding practice and data quality.

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CONFLICTS OF INTEREST

None.

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